FIRE PREVENTION STANDARDS

OBJECTIVE

Vaulted tanks for the dispensing or storage of hazardous materials or flammable liquids located outside of buildings shall be in accordance with the following standard. This standard outlines the procedure to be followed and defines the requirements of the Sacramento Metropolitan Fire District that may be more restrictive and not included in existing codes or standards.

This standard is pursuant to Section 101.4, Articles 79, 80, and Standard 79-7 of the 1994 Uniform Fire Code, Southwest Research Institute (SWRI) 93-01, and Underwriters Laboratories, Inc. (UL) 2085.

DEFINITIONS

A. FUEL DELIVERY SYSTEM is a system that consists of a tank vehicle containing a pump, fill hose with appropriate connections, and a person who performs the tank filling operation of transferring fuel from the tank vehicle to an aboveground tank.

B. LEAKING TANK is any leak that has a loss of 0.05 gallons per hour or more. It shall also include unauthorized discharges that are any release or admission of any hazardous substance, unless the release is authorized by the Fire Chief.

C. PRIMARY TANK is a listed aboveground atmospheric tank used to store liquid.

D. PROTECTED ABOVEGROUND TANK is a listed tank system consisting or a primary tank provided with protection from physical damage, and fire resistive protection from a high intensity liquid pool fire exposure. The tank system is allowed to provide these protection elements as a unit or is allowed to be an assembly of components, or a combination thereof.

PROCEDURE

A. Permits

1. A permit is required from the Fire District see Ordinance No. 5 permit A-18. A plan review fee is also required to be paid at the time of plan submission.

2. A separate permit must be obtained from the Sacramento County Building Dept. The Building Department review will include but not be limited to the structural soundness of the pad (including 1,000 pounds per square foot as the maximum soil pressure allowed, pressures above that require a soils report), electrical, mechanical, plumbing, planning and site plans.

3. If in a residential zone a use permit from the Sacramento County Planning Dept. is required with a clearance from Environmental Health.

4. If near any waterway or storm drain a “Spill Prevention Control and Countermeasure Plan” must be on site and filed with State Water Resources Control Board prior to using the tank. In accordance with Health and Safety Code Section 25270 and Federal Law.

B. Plans shall be submitted with permit applications. The plans shall include the design, details, and specifications of the following:

1. Quantities and types of liquids to be stored.
2. Distances from tanks and dispensers to property lines and buildings.
3. Vehicle access.
4. Fire appliances.
5. Vehicle impact protection.
6. Protected aboveground tanks and their supports.
7. Method of storage and dispensing.
8. Overfill prevention, spill containment, vents, vapor recovery, dispensers, and other equipment and accessories.
9. Seismic design in accordance with the Building Code.
10. Secondary Containment.
11. Venting.
12. Piping.
13. Electrical Systems.
14. Emergency Controls.
15. Any other information.

C. Tank Design

1. Tanks shall be listed protected aboveground tanks and meet the requirements of UFC Standard A-II-F-1, 1994.
2. Primary tanks shall be designed in accordance with Section 7902.1.8.2.1 UFC 1994.
3. Tanks shall not exceed 10,000 gallon capacity or 40,000 gallon aggregate.
4. Vents shall be sized in accordance with 7902.2.6.3 UFC 1994 and approved flame arresters shall be installed in normal vents.

D. Installation of Tanks

1. Tanks less than or equal to 6,000 gallons shall be at least 15 feet from any property line, 5 feet from any building on the same property, and 3 feet from any other tank.

2. Tanks between 6,000 and 10,000 gallons shall be at least 50 feet from any property line, 25 feet from any building on the same property, and 3 feet from any other tank.

3. Tank installation at the maximum aggregate shall be separated from other installations but not less than 100 feet.

4. Protected aboveground tanks shall be provided with drainage control and secondary containment that is a component of the listed tank system.

5. Guard posts shall be provided. These protection barricades shall consist of a six (6) foot length of six (6) inch steel pipe filled with concrete and set in concrete to a depth of three (3) feet in a ten (10) inch diameter hole. Barricades shall be placed a minimum of three (3) feet from the device that they protect and a maximum of forty-eight (48) inches apart. Barricades shall never obstruct the operation of the device being protected.

6. Overfill prevention; tanks shall not be filled in excess of 90 percent of their capacity. An overfill prevention system shall be provided for each tank. During tank filling operation the system shall:

   a. Provide an independent means of notifying the person filling the tank that the fluid level has reached 85 percent of tank capacity by providing an audible or visual alarm signal, providing a tank level gauge marked at 85 percent of tank capacity, or other approved means, and
   b. Automatically shut off the flow of fuel to the tank when the quantity of liquid in the tank reaches 90 percent of tank capacity. For rigid hose fuel delivery systems, an approved means shall be provided to empty the fill hose into the tank after the automatic shutoff device is activated.
   c. A permanent sign shall be provided at the fill point for the tank documenting the filling procedure and the tank calibration chart. The filling procedure shall require the person filling the tank to determine the gallonage required to fill it to 90 percent of capacity before commencing the fill operation.

7. Fill pipe connection shall be provided with a means for making a direct connection to the tank vehicle's fuel delivery hose so that the delivery of fuel is not exposed to the open air during the filling operation. When any portion of the full pipe exterior to the tank extends below the level of the top of the tank, a check valve shall be installed in the fill pipe not more than 12 inches from the fill hose connection.

8. A spill container having a capacity of not less than 5 gallons nor more than 20 shall be provided for each fill connection. For tanks with top fill connection, spill containers shall be noncombustible and shall be fixed to the tank and equipped with a manual drain valve which drains into the primary tank. For tanks with a remote fill connection, a portable spill container shall be provided.

9. Warning signs and identifications signs shall be installed to clearly identify hazards. Conspicuous signs prohibiting simultaneous tank filling and fuel dispensing shall be posted.

E. Dispensing and Piping Systems

1. Dispensing and piping systems and electrical controls shall be installed in accordance with Section 7901.11 and Article 52 of the 1994 UFC.

2. Tank openings in protected aboveground tanks shall be through the top only.

3. Dispensing devices are allowed to be installed on the top or immediately adjacent to protected aboveground tanks.

4. Approved antisiphon devices shall be installed in each external pipe connected to the tank when the pipe extends below the level of the top of the tank.

F. Tank vehicles shall not be parked within 25 feet of tanks except when filling the protected aboveground tank.

G. Protected aboveground tanks, piping and dispensing systems shall be maintained in a safe operating condition. Protected aboveground tanks and components of dispensing systems shall be maintained in accordance with their listings. Damage to protected aboveground tanks shall be repaired using materials having equal or greater strength and fire resistance.

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Mike Dobson, Fire Marshal